

**Appl. No.: 09/735,267**  
**Amdt. dated December 9, 2003**  
**Reply to Office action of September 11, 2003**

### **REMARKS/ARGUMENTS**

Applicants received the Office Action dated September 11, 2003 in which the Examiner: (1) rejected claims 1 and 13 as obvious over Anantham (U.S. Pat. No. 5,634,138) in view of Gehman (U.S. Pat. No. 6,260,093); (2) rejected claims 2-7, 14 and 16-21 as obvious over Anantham in view of Gehman and McMinn (U.S. Pat. No. 6,097,403); and (3) rejected claims 8-12, 15, and 22-24 as obvious over Anantham in view of Gehman, McMinn and "PCI System Architecture." In this Response, Applicants amend the Abstract and traverse all claim rejections as explained below.

Applicants amend the Abstract as shown to correct typographical errors and to more fully describe an exemplary, but not the only, embodiment of the invention.

Claim 1 requires, among other features, a bridge and four busses—first and second computer busses and first and second multicast busses—configured as described in the claim. More specifically, the claimed first and second computer busses couple to the bridge. Further, a first plurality of devices connects to the first multicast bus and a second plurality of devices connects to the second multicast bus. Claim 1 also requires that "one of the first plurality of bus devices is capable of transmitting a multicast signal to at least two of said second plurality of bus devices, which are identified by a signal transmitted on said first multicast bus and said second multicast bus."

Anantham is directed to burst broadcasting on a PCI bus. Figure 1 of Anantham provides a system drawing that is labeled as "prior art" that shows various devices coupled to a PCI bus 30. Anantham's disclosure does not describe PCI bus 30 being capable of broadcasting. Figure 2 reflects Anantham's contribution and illustrates one device 60 and three devices 70 coupled to a bus 50. As shown, device 60 can broadcast data to multiple devices 70. See also col. 3, lines 25-31. Such broadcast transactions are not described as passing through bridge 57.

Gehman is directed to arbitrating access to multiple busses in a data processing system. Figure 2 of Gehman shows two busses 202 and 204

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interconnected by a bridge 206. Devices on one of the busses can initiate transactions to devices on the other bus. Gehman does not teach or suggest multicast transactions.

Applicants respectfully submit that the Examiner's rejection of claim 1 is flawed for at least the following reasons. Claim 1 requires the system to have a first computer bus and a second computer bus. The Examiner identified bus 30 of Anantham's Figure 1 and bus 50 of Figure 2 as being akin to the claimed first and second computer busses. Anantham does not suggest that busses 30 and 50 be included in the same system. Although unclear (which should weigh in Applicant's favor), Anantham may propose replacing the prior art bus 30 of Figure 1 with bus 50 of Figure 2, and not having both busses present in the same system. At least for this reason, claim 1 is patentable.

Further, claim 1 requires a bridge that couples together the first and second computer busses. For this limitation, the Examiner pointed to bridge 57 of Figure 2 of Anantham. Anantham, however, does not teach or even suggest that bridge 57 couples to bus 50 of Figure 2 and bus 30 of Figure 1. For this additional reason, claim 1 is patentable.

In addition, claim 1 requires a first multicast bus connected to a first plurality of devices that connect to the first computer bus. The claim similarly requires a second multicast bus connected to a second plurality of devices that connect to the second computer bus. The Examiner identified PCI bus 30 in Anantham's Figure 1 as being the claimed first multicast bus. Anantham's bus 30, however, is not taught or suggested as being capable of multicast transactions.

The Examiner concluded that Anantham does not teach "the multicast master being on a different bus." Office Action page 2. Instead, the Examiner turned to Gehman that, according to the Examiner, teaches "how a master on a first bus can gain access to a target on a second bus by translating the signals across a bus bridge." Office Action page 2. The Examiner concluded that "[i]t would have been obvious to a person of ordinary skill in the art at the time of the invention to allow the master to be on a different bus because this would have

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allowed greater system flexibility." The Examiner failed to properly justify combining Anantham and Gehman in the obviousness rejection. Specifically, the Examiner did not explain how the art suggested such a change and why permitting the master to be on a different bus would have been suggested by the art nor how that would have enabled "greater system flexibility" – an unexplained concept.

Even if greater flexibility were to result from modifying Anantham in light of Gehman as suggested by the Examiner, the Examiner's reasoning still fails to justify combining Anantham and Gehman. That is, the Examiner has not established how achieving greater flexibility constitutes a sufficient ground to combine references in an obviousness analysis. Surely if heightened flexibility was enough to permit prior art references to be combined together, then virtually all references could be combined together—one could almost always conjure up some form of heightened flexibility from a combination of references. Such a result clearly is not intended under our patent system. Moreover, Applicants respectfully submit that the Examiner has improperly glossed over a crucial element of an obviousness analysis. As the Federal Circuit made abundantly clear:

Measuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."

*In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (citations omitted) (reversing the examiner's rejection for lack of a proper showing to support combining prior art references). The Examiner has improperly used

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hindsight to compare the claims against the art of record. Gehman is not related to multicast transactions and the Examiner has not offered a legally permissible reason as to why one of ordinary skill in the art would have been motivated by the prior art to use the teachings of Gehman with Anantham in the manner suggested by the Examiner. Anantham does not suggest that it would be desirable to conduct multicast transactions between busses connected to a bridge and thus there is no suggestion or motivation for modifying Anantham to include trans-bridge multicasting.

For any or all of the reasons stated above, claim 1 is patentable. Claims 2-15 depend on or from claim 1 and thus are patentable at least for the same reason as claim 1.

The Examiner rejected method claim 16 as obvious over the combination of Anantham, Gehman, and McMinn. Claim 16 requires at least six "acts." The Examiner has not addressed all claimed acts. For instance, the Examiner has not established where in the art of record the act of "identifying the multiple targets on the second bus via a target identification signal transmitted on a first and second multicast bus" is found. Further, the Examiner has not established where in the art of record the acts of "signaling the bridge that a multicast cycle has been initiated," "indicating that data for a multicast cycle is appearing on the second bus," and "capturing the multicast data at the targets identified by the target identification signal" can be found. Applicants contend that the art of record is devoid of any such specific teachings and thus the Examiner failed to establish a *prima facie* case of obviousness with regard to claim 16.

The Examiner used McMinn in the rejection of claim 16 for its teaching of "sideband signals" although claim 16 does not explicitly refer to sideband signals. The Examiner concluded that it would have been obvious to combine McMinn with Anantham and Gehman because "this would have allowed for faster multicast setup by eliminating the setup cycle." Office Action page 3. At the risk of being redundant, Applicants

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respectfully submit that merely noting a benefit that might result from a combination of references is not sufficient to support a rejection of a claim based on the hypothetical and speculative combination. The prior art (not the claim) must suggest the desirability of making the combination. See *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (reversing examiner's rejection)

At least for these reasons, claim 16 is patentable over the art of record. Claims 17-24 depend on or from claim 16 and thus are patentable at least for the same reason as claim 16.


#### **CONCLUSION**

In the course of the foregoing discussions, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art which have yet to be raised, but which may be raised in the future.

If any fees or time extensions are inadvertently omitted or if any fees have been overpaid, please appropriately charge or credit those fees to Hewlett-Packard Company Deposit Account Number 08-2025 and enter any time extension(s) necessary to prevent this case from being abandoned.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

  
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### **ABSTRACT**

A computer system with a plurality of peripheral busses is adapted to permit multicast signals to be transmitted by a device on one peripheral bus to multiple devices on the other peripheral bus. In an exemplary embodiment, two PCI busses are provided, and master devices on either bus are capable of transmitting multicast signals to multiple targets on either bus. Targets of a multicast cycle are identified by a target identification signal on a first and a second multicast bus. A bus bridge relays the data for the multicast cycle between devices. In an exemplary embodiment, a sideband signal from the master to the bridge indicates a multicast signal has been transmitted on one of the PCI busses. In response, the bridge relays the multicast data to the second PCI bus, while also transmitting a sideband signal to devices on the second bus indicating multicast data is being transmitted on that bus. Targets identified on the second bus then capture the multicast data.